3

National Detector Dog Manual

Health Care

Diseases and Parasites

Contents

Introduction

Taking proper care of a detector dog is extremely important to its overall health and will greatly affect its performance. Canine Officers are responsible for the well being of their detector dogs. Areas to be aware of are the following:

- Safety hazards
- Disturbing influences that may interfere with the dog's rest and relaxation
- Adequate kennel construction
- Climatic conditions
- Feeding and watering schedules

Veterinarians are the best source for information about the health and care of dogs, feeding and watering schedules, and first aid procedures. Establish a good working relationship with the veterinarian responsible for the care of the detector dogs.

Infectious Diseases

Infectious diseases are caused by microorganisms that can be transmitted without actual contact. Diseases that are transmitted from one animal to another are called contagious. Diseases that are transmitted from an animal to a human are called zoonotic.

Disease Prevention and Vaccination

Because of the importance and the nature of their demanding work, detector dogs must stay healthy. Veterinarians are experts in treating, preventing, and controlling diseases that could infect detector dogs. Canine officers help prevent diseases by becoming familiar with their dog's normal body functions, such as appetite and stool, and by knowing when to report potential medical problems. Therefore, canine officers must be familiar with the symptoms of diseases and parasites in order to detect potential problems.

The important diseases that can infect detector dogs are listed and then described below. These diseases are prevented by annual vaccinations.

- Distemper
- Hepatitis
- Leptospirosis
- Lyme disease bacteria (in areas where prevalent)
- Rabies (1 or 3 year vaccine)
- Parvo virus
- Rocky Mountain Spotted Fever
- Corona virus (Canine Conaviral Enteritis)
- Canine Infectious Tracheobronchitis (CITB)

Distemper

Distemper is a widespread, highly contagious, and often fatal disease that occurs primarily in young dogs. The airborne virus is easily transmitted from dog to dog, but does not affect humans.

Hepatitis

Hepatitis is a widespread, viral disease mostly found in young dogs, but can also infect older dogs that have not been immunized. It does not infect humans. Infectious hepatitis is spread through urine—primarily when feeding and drinking utensils are contaminated with urine. The mortality rate is not as high as is from distemper, but recovery takes a long time.

Leptospirosis

Leptospirosis is commonly known as lepto. It is caused by a spirochete (bacterium of the order Spirochaetales) and is fairly common. Other animals can be infected by this disease, and it can be transmitted to humans. It is spread through the urine, usually of dogs and rats. Rodent control is important in preventing the spread of lepto since rats are a common carrier.

Rodenticides are highly toxic to dogs!

It is essential that dogs do not consume contaminated food or water. Where lepto is known to exist or suspected to exist, dogs should not be allowed to enter or drink surface water that may be contaminated by urine or dead animals. The possibility of human infection reinforces the need for personal cleanliness. Canine officers must protect themselves from urine or contamination when caring for sick dogs.

Lyme Disease

Lyme disease is an infection caused by a bacteria. The disease is spread by the bite of ticks that are infected with the bacteria. Typically, the larvae and nymphs become infected with Lyme disease bacteria when they feed on infected small animals then, infected nymphs and adult ticks bit and transmit Lyme disease bacteria to other animals and humans.

Lyme disease is difficult to diagnose because its symptoms are similar to other diseases, such as fever, loss of appetite, swelling of the legs, joint and muscle pains, and staggering gait. Even though Lyme disease is treatable, some dogs that have become infected with the disease have developed arthritis.

Ticks search for host animals from the tips of grasses and shrubs and transfer to an animal (or person) that brushes up against the vegetation. They frequent wooded, brushy, and grassy places. The risk of exposure to ticks is greatest in the woods and landscaped areas of properties. Therefore, it is particularly important to take preventive action in those areas where Lyme disease occurs. Lyme disease occurs along the east coast from Maine to Florida; in the north central States, especially Wisconsin and Minnesota; in the south from Alabama to Texas; and along the west coast.

When selecting a kennel, ensure that outdoor runs and fenced-in areas are well maintained with leaves removed, and brush and tall grass trimmed away from the buildings and edges of the runs. Ensure that the kennel has a treatment plan to prevent tick infestations.

Canine officers should take extra care when checking their dog's skin for the presence of ticks and fleas during the spring through early fall, especially if they are located in areas where Lyme disease is known to occur. The male tick is a small, flat insect about the size of a match head. The female tick, which is the blood feeder, may swell up to the size of a pea. Both are attached to the dog only by their mouth parts. See additional information about how to remove ticks under *Ticks* in this section.

Rabies

Rabies is an acute, infectious, often fatal viral disease of most warm-blooded animals. It attacks the central nervous system. It is transmitted by the bite of an affected animal, or by contact with the saliva of an affected animal with broken skin. The animals most frequently affected are skunks, raccoons, bats, foxes, dogs, cattle, and cats.

Symptoms may include a sudden change in temperament or attitude, excitement, difficulty in swallowing water or food, blank expression, slack jaw, excessive drooling, paralysis, coma, and death. Wild animals with rabies often lose their natural fear and attack rather than retreat.

Canine officers must prevent contact between detector dogs and wild or stray animals. Report to the veterinarian any contact resulting in a bite or scratch. Use extreme caution while capturing an animal to prevent bites to humans. Medical treatment should be given as soon as possible if a canine officer is bitten by an animal.

Parvo Virus

Parvo virus is a highly contagious disease that causes diarrhea and vomiting and often can be fatal. The highest mortality rate is in dogs less than 12 weeks old. In adult dogs, the symptoms are usually less severe, resulting in fewer deaths.

Other symptoms of the disease include passing or vomiting blood followed by rapid dehydration. Sometimes dogs infected with Parvo virus have jaundice.

Rocky Mountain Spotted Fever

Rocky Mountain spotted fever is a disease transmitted by several species of ticks. The disease occurs in the east from New York to Florida, and in the south from Alabama to Texas and is more frequently seen from April through September.

Infected adult ticks transmit the disease to dogs during biting and feeding. The symptoms in dogs include listlessness, conjunctivitis, depression, high fever, loss of appetite, cough, difficult breathing, swelling of the legs, joint and muscle pains, vomiting and diarrhea, staggering gait, altered mental state, and seizures. These symptoms are similar to distemper, which may be the first diagnosis.

Canine officers should take extra care when checking their dog's skin for the presence of ticks and fleas during the spring through early fall, especially if they are located in areas where Rocky Mountain spotted fever is known to occur. See additional information about how to remove ticks under *Ticks* in this section.

Corona Virus

Corona virus is a highly contagious disease that causes diarrhea and vomiting. It is the second leading cause of viral diarrhea next to Parvo virus. Corona virus weakens the dog by causing severe diarrhea, vomiting, excessive thirst, weight loss, listlessness, and loss of appetite. It affects dogs of all ages, but it severely affects puppies. It is also possible for dogs to be affected by both Parvo virus and Corona virus at the same time.

Canine Infectious Tracheo-bronchitis (CITB)

CITB is commonly known as kennel cough and is usually self-limiting and is rarely fatal. It is usually a mix of viral and bacterial agents. The most common viruses involved are parainfluenza and canine adenovirus. Other factors, including mycoplasmas and canine distemper, can cause severe and potentially fatal complications, such as pneumonia.

CITB is an airborne infection with an incubation period of 5–10 days. It appears in two main forms. The milder form lasts 1–3 weeks and occurs most often in dogs that have been vaccinated against distemper and hepatitis. Symptoms include a dry, hacking cough that might be followed by retching and vomiting. In some cases, pneumonia might follow the mild disease. The severe form is more common in dogs with an uncertain vaccination history. It starts with a dry, mucoid, and sometimes painful cough that can progress to severe bronchopneumonia. In some cases, the severe form could be fatal.

CITB is a highly contagious disease striking even the cleanest, best operated kennel facilities. In order to prevent infection, local immunity must be created in the respiratory tract. An intranasal vaccination (like nose drops) must be administered by a veterinarian to provide safe, effective protection from the disease.

Summary

Refer to ***Table 3-2-1*** for a summary of the important diseases that could affect detector dogs. The table summarizes the symptoms to look for when observing dogs and kennel facilities. Canine officers should notify the veterinarian when a detector dog shows one or more of the symptoms of diseases.

Other diseases for which vaccines do not exist can affect dogs, such as, upper respiratory infections, pneumonia, and gastroenteritis. Affected dogs may show symptoms including high temperature, loss of appetite, loss of energy, vomiting, diarrhea, and coughing. Any of these symptoms should be reported to a veterinarian.

Table 3-2-1: Summary of Important Infectious Diseases

Name of disease:	Symptoms:	Caused by:	Transmitted by:	Prevention method:
Distemper	◆ Fever ◆ Loss of appetite ◆ Depression ◆ Discharge from eyes and nose	Virus	Airborne or by direct contact	Distemper vaccination annually
Hepatitis	◆ Fever ◆ Loss of appetite ◆ Depression ◆ Discharge from eyes and nose	Virus	Urine	◆ Hepatitis vaccination annually ◆ Practice good sanitation in kennel
Leptospirosis	◆ Fever ◆ Loss of appetite ◆ Diarrhea ◆ Vomiting	Bacteria (Spirochete)	Urine	◆ Leptospirosis vaccination annually ◆ Practice good sanitation in kennel
Lyme disease	◆ Fever ◆ Loss of appetite ◆ Swelling of legs ◆ Joint and muscle pain ◆ Staggering gait	Bacteria (Borrelia burgdor Feri)	Bite and feeding of infected tick	◆ Practice good sanitation in kennel ◆ Well-kept grounds of kennel and runs ◆ Veterinarian prescribed vaccination in prevalent areas ◆ Daily health checks of dog's skin, especially in the spring through fall
Parvo virus	◆ Diarrhea ◆ Vomiting ◆ Passing of blood ◆ Dehydration (continued on next page)	Virus	Airborne or by direct contact	◆ Minimal annual vaccination ◆ Parvo virus vaccination annually

Table 3-2-1: Summary of Important Infectious Diseases (continued)

Name of disease:	Symptoms:	Caused by:	Transmitted by:	Prevention method:
Rocky Mountain spotted fever	◆ Listlessness ◆ Conjunctivitis ◆ Depression ◆ High fever ◆ Loss of appetite ◆ Cough ◆ Difficult breathing ◆ Swelling of the legs ◆ Joint and muscle pain ◆ Vomiting and diarrhea ◆ Staggering gait ◆ Altered mental state ◆ Seizures	Rickettsial disease	Bite and feeding of infected tick	◆ Practice good sanitation in kennel ◆ Well-kept grounds of kennel and runs ◆ Daily health check of dog's skin, especially in the spring through fall
Corona virus	◆ Diarrhea ◆ Vomiting ◆ Excessive thirst ◆ Loss of appetite ◆ Listlessness ◆ Weight loss	Virus	Airborne or by direct contact	◆ Minimal annual vaccination ◆ Corona virus vaccination annually
Rabies	◆ Change in temperament ◆ Difficulty swallowing ◆ Blank expression ◆ Slack jaw ◆ Excessive drooling ◆ Seeks solitude ◆ Depression ◆ Paralysis ◆ Coma and death in 7-10 days	Virus	Saliva from infected animal	Rabies vaccination (1 or 3 year vaccine)
CITB (kennel cough)	◆ Fever ◆ Runny nose ◆ Red or watery eyes ◆ Dry, hacking cough ◆ Retching and vomiting	Virus	Airborne or by direct contact	◆ Minimal annual vaccination ◆ Intranasal vaccination annually

Noninfectious Diseases and Severe Illnesses

Many illnesses affecting dogs are not caused by viruses, bacteria, or other infectious diseases. Noninfectious diseases and severe illnesses include: overheating, arthritis, bloating, chronic kidney disease, tick paralysis (see ***Ticks*** under *External Parasites*), epilepsy, and allergies.

Since symptoms of a noninfectious disease or severe illness may resemble those of an infectious disease, canine officers should note any abnormality, such as a gradual loss of weight, excessive urination, and obscure lameness. They should report their observation to a veterinarian.

Parasites

Parasites are organisms that infest a host animal for the purpose of feeding from the host's body. Most parasites are harmful to a dog's health, and some parasites can spread diseases to other dogs or humans. Dogs may serve as hosts to a large number of parasites; therefore, controlling parasitic infestations is very important.

External Parasites

External parasites live in or on the skin of the dog. They cause damage by sucking blood or actually eating the tissue. The dog responds by biting and scratching the irritated areas, which may lead to severe skin infections and reduce the dogs working capabilities. The most common external parasites are listed and then described below.

- Fleas
- Lice
- Mites
- Ticks

Fleas

Fleas are small, wingless, bloodsucking parasites of warm-blooded animals. They have legs adapted for jumping. Fleas torment a dog, irritate their skin, and spread disease. They crawl or jump very rapidly through the dog's coat.

Like ticks, fleas are difficult to control since they do not spend all of their time on the dog's body, but live in cracks in the kennels. Fleas may also transmit tapeworms from dog to dog. Controlling fleas requires repeated, individual treatment and continuous kennel sanitation.

Lice

Lice (plural for louse) are numerous small, flat-bodied, wingless biting or sucking insects, many of which are external parasites of dogs and humans. Biting lice live off the dog's tissues, while the sucking lice live off the dog's blood. Both produce great irritation for a dog. Biting lice crawl over the skin and through the hair. Sucking lice are usually immobile, and stand perpendicular to the skin. The eggs of lice, called nits, are small, white or gray, crescent-shaped objects fastened to the hairs. Lice, unlike fleas and ticks, can only live a short time when they are not on the dog's body. Controlling lice requires treatment only of infested animals.

Mites

Mites of several types irritate the dog's ear canal (ear mite) or produce mange (mange mite). Mites spend their entire life on the dog. Controlling mites depends primarily on treating the infested dog.

The ear mite lives in the ear canal and causes a severe irritation. The mites are small but are visible to the naked eye as tiny, white crawling specks. Affected dogs scratch at the ear and cock their heads to one side, or shake their heads. Examine the ear canals for a large amount of dark-colored waxy discharge.

Mange mites live in the dog's skin. The sarcoptic mange mite can be transmitted to humans. Mange mites are too small to be seen by the naked eye, but a skin scraping of the infested area will reveal them under a microscope. Canine officers should watch for unusual hair loss as a sign of mange mites.

Ticks

Ticks are small, bloodsucking parasites. They are common in many parts of the world. Ticks feed on blood by inserting their mouth parts into the skin of a host animal. When they are present in large numbers, they can cause a serious loss of blood. Ticks spread diseases by feeding on blood or tissue fluid from a diseased animal and then moving to another animal. Ticks search for host animals from the tips of grasses and shrubs and transfer to an animal (or person) that brushes up against the vegetation. Ticks only crawl; they do not jump or fly.

A noninfectious disease transmitted by ticks is called tick paralysis. Ticks are capable of secreting a toxin that causes paralysis in dogs. Not all infected animals become paralyzed. The adult ticks of some species produce a salivary toxin that enters the blood stream of a host animal and interferes with its nervous system. The onset of symptoms is gradual, with paralysis affecting the pelvis area first, resulting in a staggering gait. Other early symptoms include an altered or impaired voice and cough. Within 24-72 hours, a dog lies down, its reflexes diminish, its jaw muscle weakens, and facial paralysis is noticeable. Death may occur within several days from respiratory paralysis. Recovery is usually good and occurs within 1–3 days after removing the tick and/or treating the dog.

Two other important diseases transmitted by ticks are Lyme disease bacteria and Rocky Mountain spotted fever. See additional information about these two diseases in this section.

Canine officers should take extra care when checking their dog's skin for the presence of ticks during the spring through early fall, especially if they are located in areas where Lyme disease bacteria and Rocky Mountain spotted fever are known to occur. Ticks are usually found on the ears, neck, head, and between the toes of a dog. The male tick is a small, flat insect about the size of a match head. The female tick, which is the blood feeder, may swell up to the size of a pea. Both are attached to the dog only by their mouth parts.

Canine officers must be very careful when removing ticks, since they may carry diseases transmittable to humans. Also, if all of the tick is not removed, the skin may become inflamed. For ticks attached deep within the ear canal, have them removed by a veterinarian to avoid injury to the dog's ear. To remove a tick, place your index finger and thumb nails (or tweezers) around the body of the tick as close to the dog's skin as possible. Slowly withdraw the tick's head from the skin. Flush the tick down the nearest drain, or immerse it in alcohol.

Do not crush or squeeze a tick with your bare fingers.

After handling ticks, wash your hands with soap and water because they can carry diseases that are transmittable to humans.

Ticks may be found in cracks in the floors and sides of the kennel and in the grass and bushes in the training areas. They may live away from the dog's body as long as a year without having to return for a blood meal. To control ticks, the kennels, training areas, and working areas should be treated with insecticides. Treatment must be approved by the veterinarian, since many insecticides are harmful to dogs.

Internal Parasites

Internal parasites (living in the host's body) irritate the tissues, rob the body of blood or essential elements of its diet, or interfere with specific body functions. An understanding of the life cycle of internal parasites is important to controlling and preventing infestation. The life cycles of several of the most commonly found internal parasites are listed and then discussed below.

- Heartworms
- Hookworms
- Roundworms
- Tapeworms
- Whipworms

Canine officers should consult with a veterinarian to determine the best way to prevent internal parasites.

Heartworms

Heartworms are found in the heart and lungs of a dog rather than the intestine. Heartworms are threadlike in appearance, are 6-8" long, and interfere with a dog's heart action and circulation.

FIGURE 3-2-1 shows the life cycle of a heartworm. The adult worms in the heart produce larvae called microfilaria. They circulate in the dog's bloodstream where they may be picked up by mosquitoes, the insect responsible for spreading the parasite. The larvae continue their development in the mosquito and then are injected into a dog's tissues when the mosquito feeds. The microfilaria travel to a dog's heart and develop into adults.

Symptoms of heartworms include: coughing, loss of weight, difficult breathing, and quick loss of energy. This parasite is diagnosed by a veterinarian during a blood test which reveals microfilaria in the bloodstream, if present. Monthly or daily medication is given to kill the microfilaria. Adult heartworms are killed by extensive treatment by a veterinarian. The treatment consists of several injections that kill the adult heartworm and of several months of rest for the dog while the dead heartworm is reabsorbed into the dog's system.

Control of heartworms includes: treating the infested dog to prevent them from serving as sources of the infestation and controlling mosquitoes in the area. Annual blood work detects early stages of heartworm.

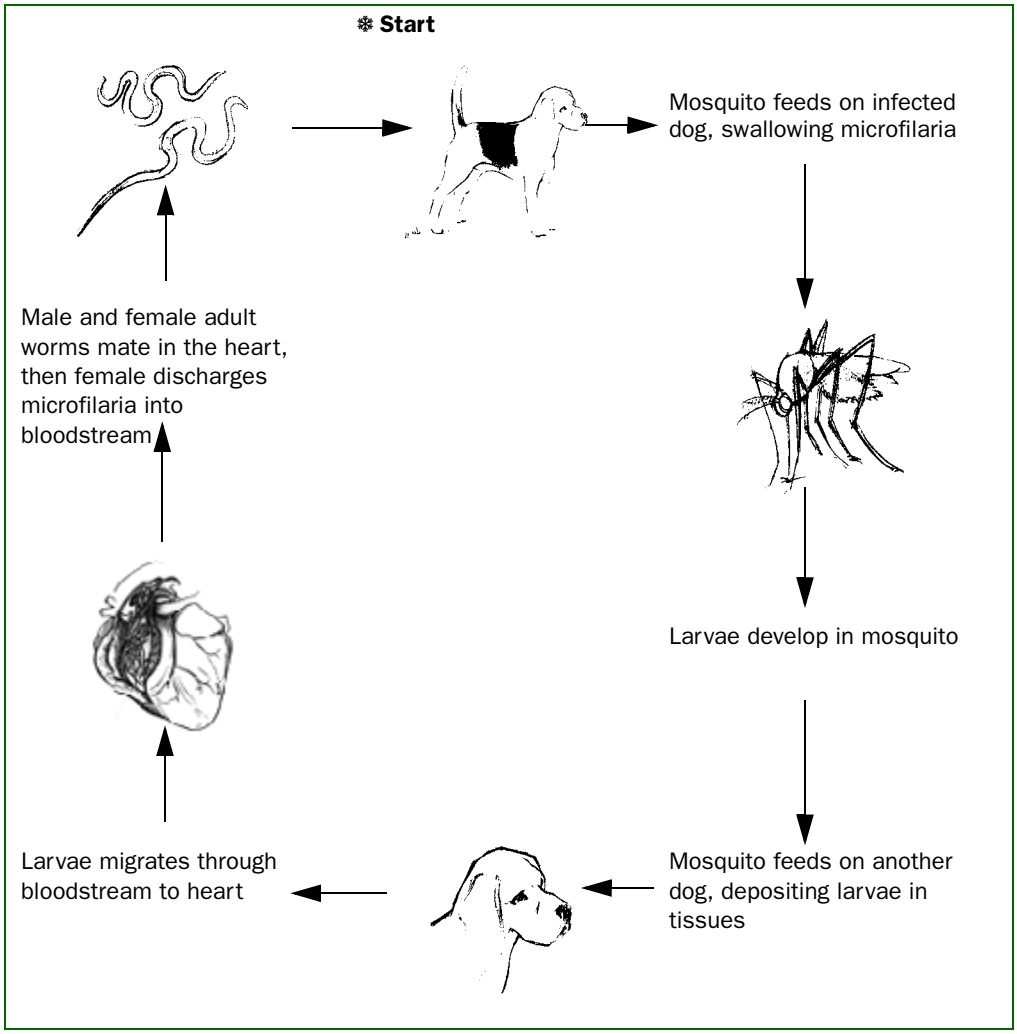

FIGURE 3-2-1: Life Cycle of a Heartworm

Hookworms

Hookworms live in a dog's intestines and are one of the most harmful parasites. They are small and thread-like (1/2–3/4" long). They suck blood and cause blood loss by tearing the intestinal wall.

FIGURE 3-2-2 shows the life cycle of a hookworm. The adult worm lives in a dog's intestine where the female produces eggs that pass through a dog's stool. Larvae develop from these eggs and can infest the same dog or another one. The larvae penetrate the skin or are swallowed as a dog licks the ground or itself. The larvae pass directly into the lungs, are coughed up and swallowed, and then reach the intestine. Once in the intestine, they develop into adult hookworms, and the cycle begins again.

Dogs with hookworms may have a variety of symptoms, depending on the severity of the infestation. A veterinarian must diagnose the disease by microscopic examination of the dog's stool. Symptoms may include: pale membranes in the mouth and eyes, loose stools containing blood, or loss of weight.

Control of hookworms includes: treating the infested dog and keeping the area free of fecal matter.

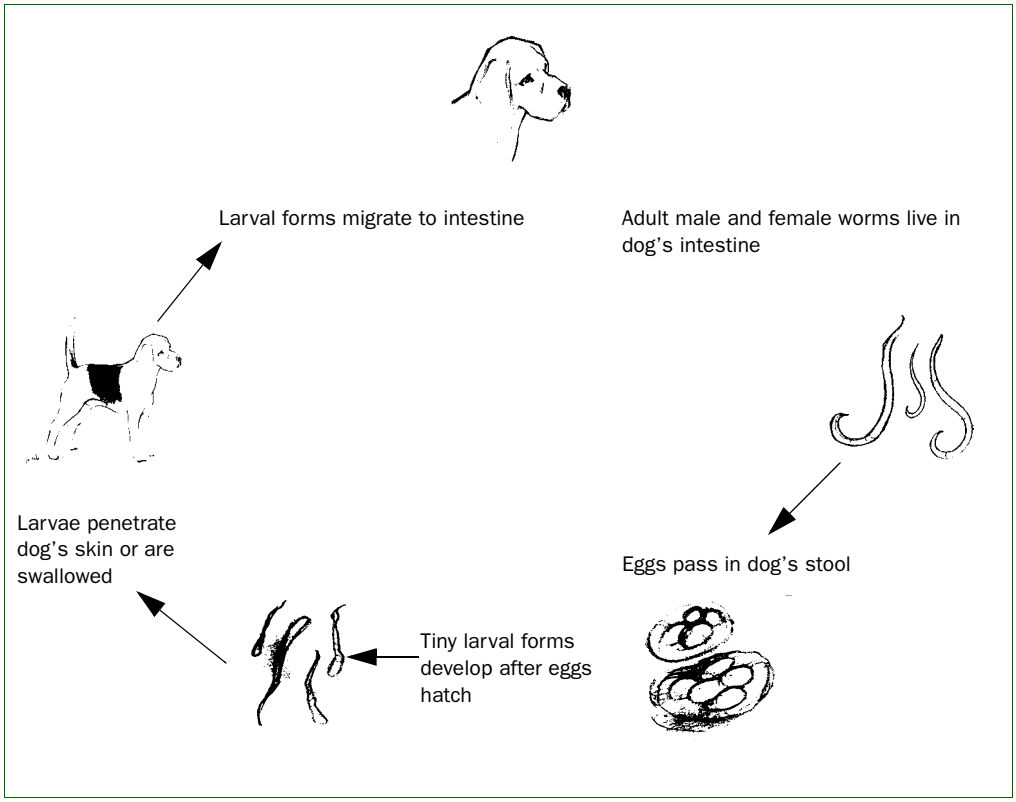

FIGURE 3-2-2: Life Cycle of a Hookworm

Roundworms

Roundworms live in a dog's intestine and range from 2-8" long. The life cycle of the roundworm is similar to that of the hookworm (refer to ***FIGURE 3-2-2***), except the eggs of the roundworm do not develop into larvae until they have been swallowed by a dog. Adult roundworms rob an infested dog of essential nutrients in the diet, and larvae of roundworms irritate as they travel through the lungs.

Symptoms may include: vomiting, diarrhea, loss of weight, and coughing. A canine officer can diagnose roundworms by finding eggs or adult roundworms in a dog's stool or vomit.

Control of roundworms includes: treating the infested dog and practicing good sanitation in the kennel area.

Tapeworms

Tapeworms are long, flat, and ribbon-like. They have many segments and a head. The tapeworm attaches its head to the wall of the intestine. Several kinds of tapeworms may infest a dog.

FIGURE 3-2-3 shows the life cycle of a tapeworm. It is rather complex. After eggs of a tapeworm have passed through a dog's stool, they are eaten by the larvae of a flea. The larvae of a tapeworm develops when the adult flea (or lice) is eaten by a dog. The larvae enters the dog's intestine and develops into an adult tapeworm.

The symptoms of tapeworms are usually not too noticeable but may include: diarrhea, loss of appetite, and loss of weight. Often the eggs of the tapeworm cannot be detected by a veterinarian during stool examinations. However, tapeworm segments passed by an infested dog may be seen in the stool or among the hairs in the anal region. These segments are called "crawling" proglottids and are small, white objects about 1/4" long (like small grains of white rice). The word crawling is used only when they are fresh and moving.

Control of tapeworms requires: treating the infested dog, practicing good sanitation in the kennel area, controlling fleas, and disallowing a dog to eat animal meats that are likely sources of infestation. Such animal meats include rabbits, rodents, sheep, and ungulates (hoofed animals), such as deer, swine, horse, cattle, and elephants.

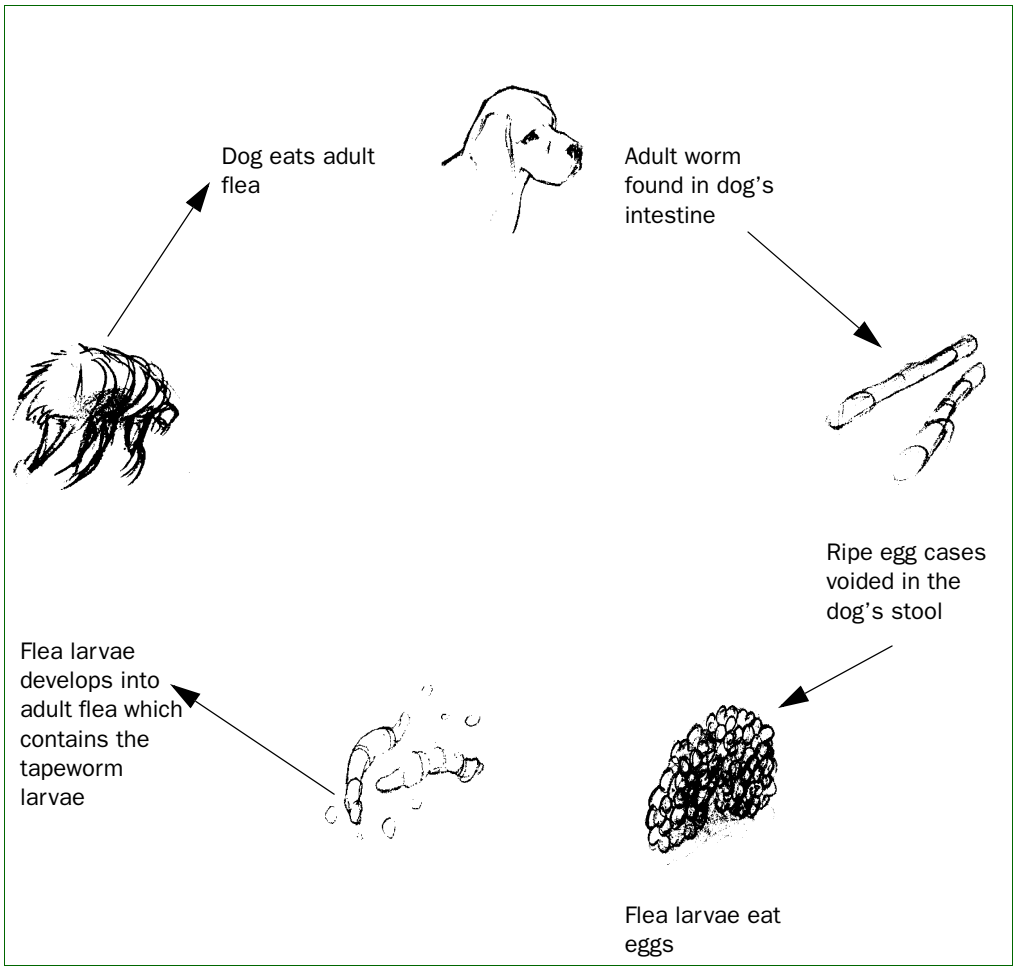

FIGURE 3-2-3: Life Cycle of a Tapeworm

Whipworms

Whipworms are smaller than roundworms (2-8" long) but larger than hookworms (1/2–3/4" long). The life cycle of the whipworm is very similar to that of the roundworm, except the larvae of the whipworm do not travel to the lungs before becoming adults in the intestine.

Symptoms may include: diarrhea, loss of weight, and pale membranes of the mouth and eyes. A veterinarian must diagnose the disease by microscopic examination of a dog's stool. Control of whipworms includes: treating the infested dog and practicing good sanitation in the kennel area, the same measures as for roundworms.

Summary

Refer to ***Table 3-2-2*** and ***Table 3-2-3*** for a summary of the external and internal parasites that could infest detector dogs. The tables summarize the symptoms to look for when observing dogs and kennel facilities. Canine officers should notify the veterinarian when a detector dog shows one or more of the symptoms of parasites.

Table 3-2-2: Summary of External Parasites

Parasite:	Type of irritation:	Symptoms:	Parasite/ disease carried:	Control:	Affects human:
Flea	◆ Bite ◆ Irritate skin	◆ Excessive scratching ◆ Chewing	◆ Tapeworms ◆ Bubonic Plague	◆ Good sanitation ◆ Pills ◆ Long term topicals ◆ Dips ◆ Powders ◆ Sprays	Yes
Lice	◆ Bite ◆ Suck blood	◆ Poor health ◆ Poor hair coat ◆ Small, white/gray crescent-shaped objects attached to hair	◆ Skin infections ◆ Tapeworms	◆ Good sanitation ◆ Dips ◆ Powders ◆ Sprays	Yes
Mite	◆ Ear mites ◆ Skin mites	◆ Dark, waxy discharge in ear canal ◆ Skin disease ◆ Hair loss	Ear infections	◆ Good sanitation ◆ Dips ◆ Powders ◆ Sprays	Yes
Mosquito	Suck blood	◆ Irritation ◆ Scratching	◆ Heartworms ◆ Encephalitis	Good sanitation	Yes
Tick	Suck blood	◆ Small, flat insect the size of a match head attached to the skin by the mouth parts ◆ Puffed-up insect the size of a pea attached to the skin by the mouth parts	◆ Lyme disease ◆ Rocky Mountain spotted fever ◆ Canine Ehrlichiosis ◆ Tick paralysis	◆ Well kept grounds at kennel ◆ Good sanitation ◆ Daily skin checks ◆ Dips ◆ Powders ◆ Sprays ◆ Long term topicals	Yes

Table 3-2-3: Summary of Internal Parasites

Parasite:	Method of infection:	Lives in:	Symptoms:	Method of diagnosis:	Affects human:
Heartworm	Microfilaria passed by mosquito during bloodsucking	◆ Heart ◆ Blood vessels	◆ Pneumonia ◆ Coughing ◆ Loss of weight ◆ Difficulty breathing ◆ Loss of strength and energy	Knott's or Difil test	No
Hookworm	◆ Ingests eggs ◆ Larvae penetrates skin	Intestine	◆ Loss of weight ◆ Blood in stool ◆ Pale membranes	Fecal exam	Yes
Roundworm	◆ Ingests eggs ◆ Prenatal from mother	◆ Intestine ◆ Stomach	◆ Poor hair coat ◆ Loss of weight ◆ Coughing up worms	Fecal exam	Yes
Tapeworm	Ingests infested, intermediate host (flea, lice)	Intestine	◆ Loss of weight ◆ Poor hair coat ◆ Small, white worm segments in stool	Visual-segments seen in stool or on hairs around anus	Yes
Whipworm	Ingests eggs or larvae	Intestine	◆ Loss of weight ◆ Poor hair coat	Fecal exam	Yes